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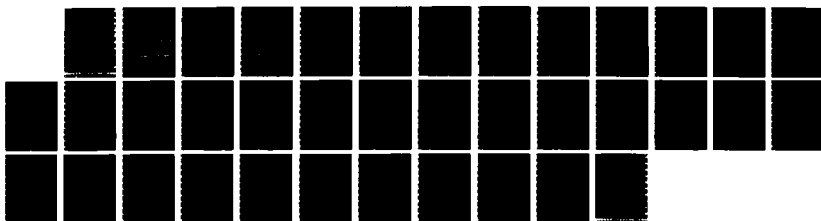
THE VR SOFTWARE PROGRAM: COMPUTING YEARLY PRODUCTION
COSTS OF COMMON COMP (U) ARMY CLOSE COMBAT ARMAMENTS
CENTER DOVER NJ H T ANDERSON DEC 86 ARCCD-SP-86001

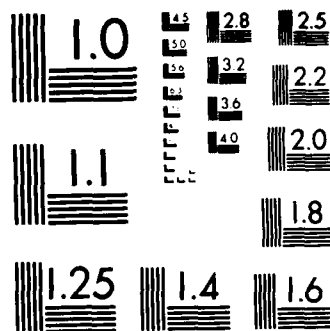
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MICROCOPY RESOLUTION TEST CHART
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SPECIAL PUBLICATION ARCCD-SP-86001

**THE YR SOFTWARE PROGRAM:
COMPUTING YEARLY PRODUCTION COSTS OF
COMMON COMPONENTS IN MULTI-ITEM AMMUNITION SYSTEMS**

HAROLD T. ANDERSON

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DECEMBER 1986



U. S. ARMY ARMAMENT RESEARCH, DEVELOPMENT AND ENGINEERING CENTER
CLOSE COMBAT ARMAMENT CENTER
DOVER, NEW JERSEY

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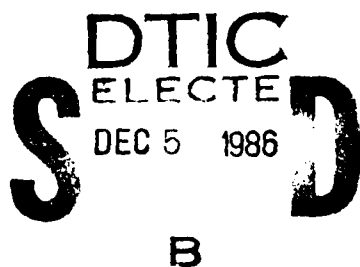
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The YR Computer Program was developed to reduce response time for providing production cost estimates for multi-item ammunition systems where the items use parts in common. The report has been written to make the program avail- able to those required to make similar estimates. The language used is the Hewlett-Packard Basic developed for the HP9845T desk calculator.		

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INTRODUCTION

The YR Computer Program was developed to improve response time for preparing unit cost estimates for multiyear buys of the 120-mm ammunition used in the M1E1 tank.

Prior to the development of this program, the yearly unit cost of each component common to two or more rounds and subject to a learning curve was calculated separately. In addition, a separate learning curve was used for each vendor. The unit costs, thus obtained, were combined with other cost data to obtain the yearly total and unit cost for each round. Written in the Hewlett-Packard Basic language, the YR program combines the input cost data and prints out yearly cost estimates in one-fifth of the time previously required. The program also escalates the estimates to "then year" and "constant year" dollars.

The program avoids introduction of errors by eliminating the necessity for manual transfer of data from one set of calculations to another. It also provides a printout of input data for review and correction before continuing with the calculations.

Instructions for using the program are given below; a flow chart is contained in appendix A.

INSTRUCTIONS*

Organize data for entry into the program by the use of data sheets similar to the one shown in appendix B. Then:

1. Enter the YR Program in the computer memory.
2. Press the RUN key to start the program. YR PROGRAM will appear on the CRT.
3. A printout on the CRT will request inputs and list instructions. Requested information is to be typed in and entered by pressing CONT key.

Note: Data items and character lengths should be limited as follows:
round designation-5, number of rounds-8, components/round-10,
vendors/component-3, component name-15, number of years-25.

4. Entered information will appear on the CRT.

* This software program has been written in the Basic language used in the Hewlett Packard 9845T desk calculator. Modification may be required for use on machines using a different dialect.

5. After a group of inputs has been entered, a printout on the CRT will ask if the inputs are correct:

- o If the inputs are correct, then the answer (yes) is indicated by keying in CONT. The program will then continue.

- o If the inputs are not correct, then the answer (no) is indicated by keying in Ø. The program will then go back and rerequest the last group of inputs. When an item of data that was previously entered correctly is rerequested, keying in CONT will reenter it without change. Data is corrected by typing in the correct data when requested and pressing CONT, per step 3, above. The incorrect data will remain on the CRT, but the corrected inputs will also appear on the CRT as they are reentered.

6. When all the data item inputs for a specific round have been entered, these inputs will be printed on paper. (A typical printout is shown in appendix B.) A printout on the CRT will ask if these inputs are correct. The procedure listed in step 5, above, will apply for approval or correction of the printed data.

7. When the data for all rounds have been entered and/or corrected, the required calculated costs will be printed on paper.

SOFTWARE

The software for the program is contained in appendix C.

REFINEMENT

The YR Program is currently being revised to interact with a mass storage so that learning curve first unit costs, fixed costs, and escalation factors can be retrieved for use without manual re-entry, if ammunition quantity changes require re-calculation of yearly costs. It is also being translated into GW-Basic for use in WYSE personal computers.

A possible refinement is modification of the program to determine the quantity of a designated round that can be obtained for a set dollar value. The quantities of other rounds using common components must be known for this refinement.

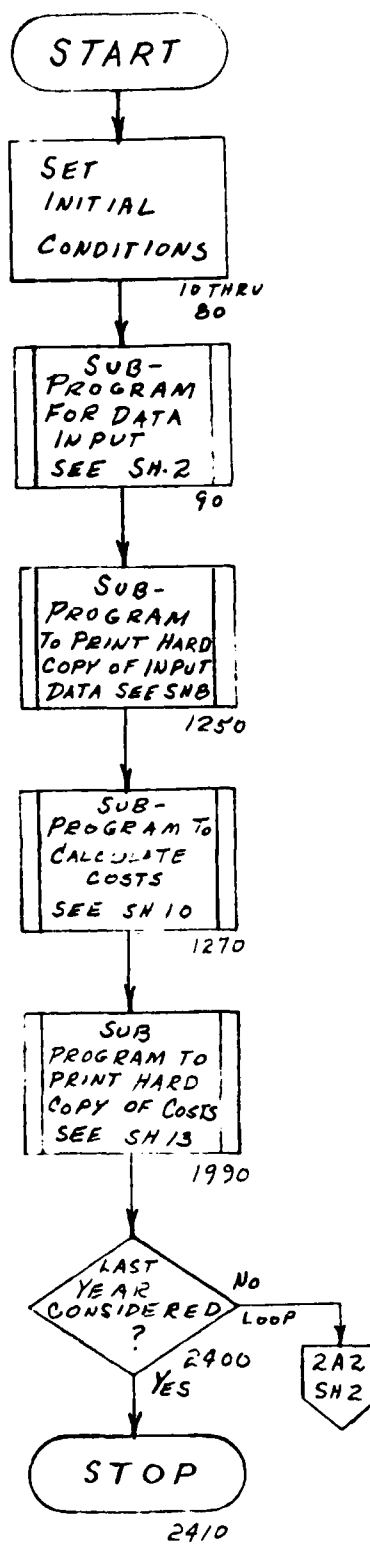
The program as written reserves storage for up to a maximum of eight rounds, each with up to ten components made by three possible vendors. The program can be modified so the reserved storage for these input data items can be expanded and contracted within the storage capability of the computer.

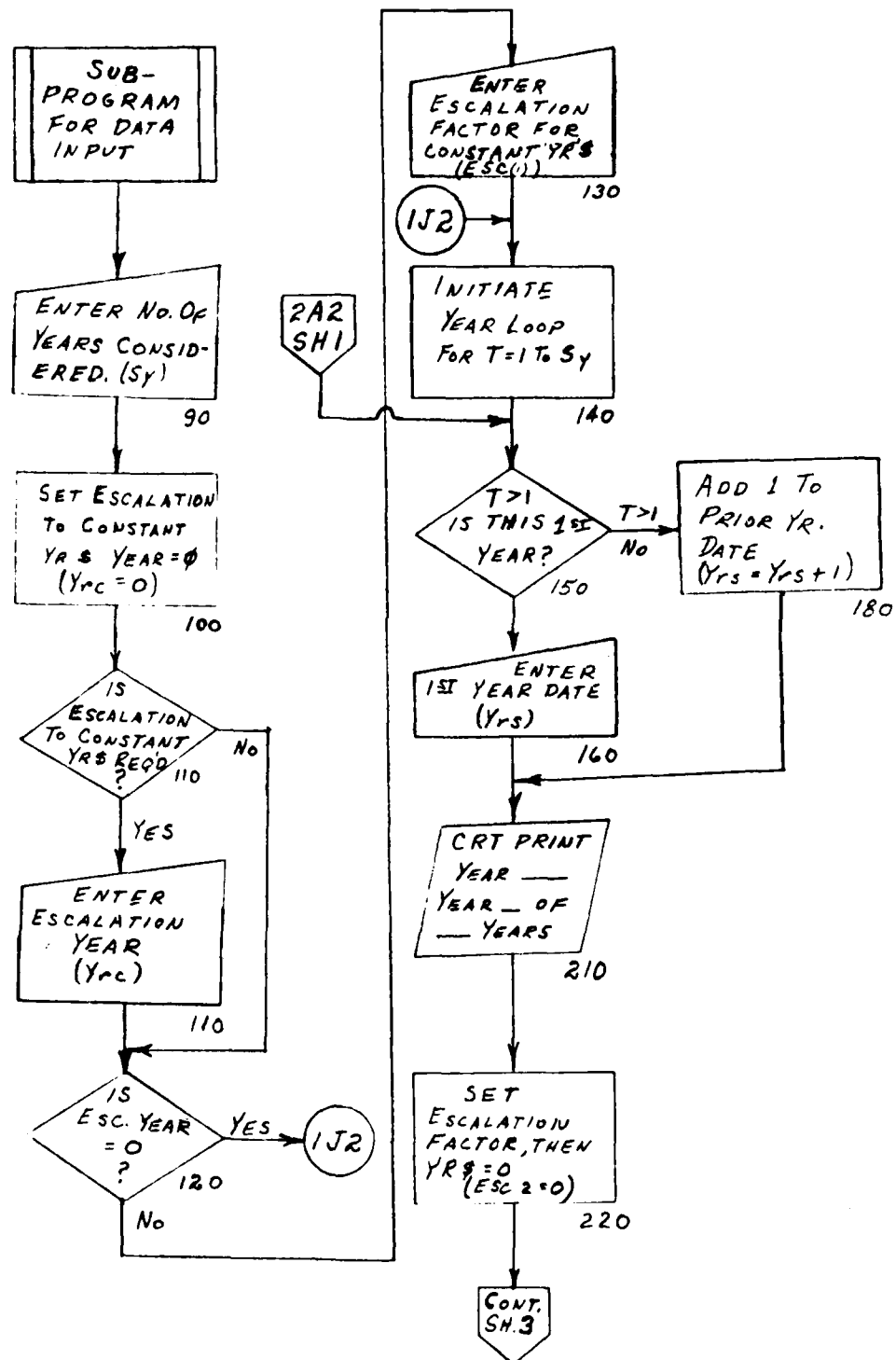
APPENDIX A

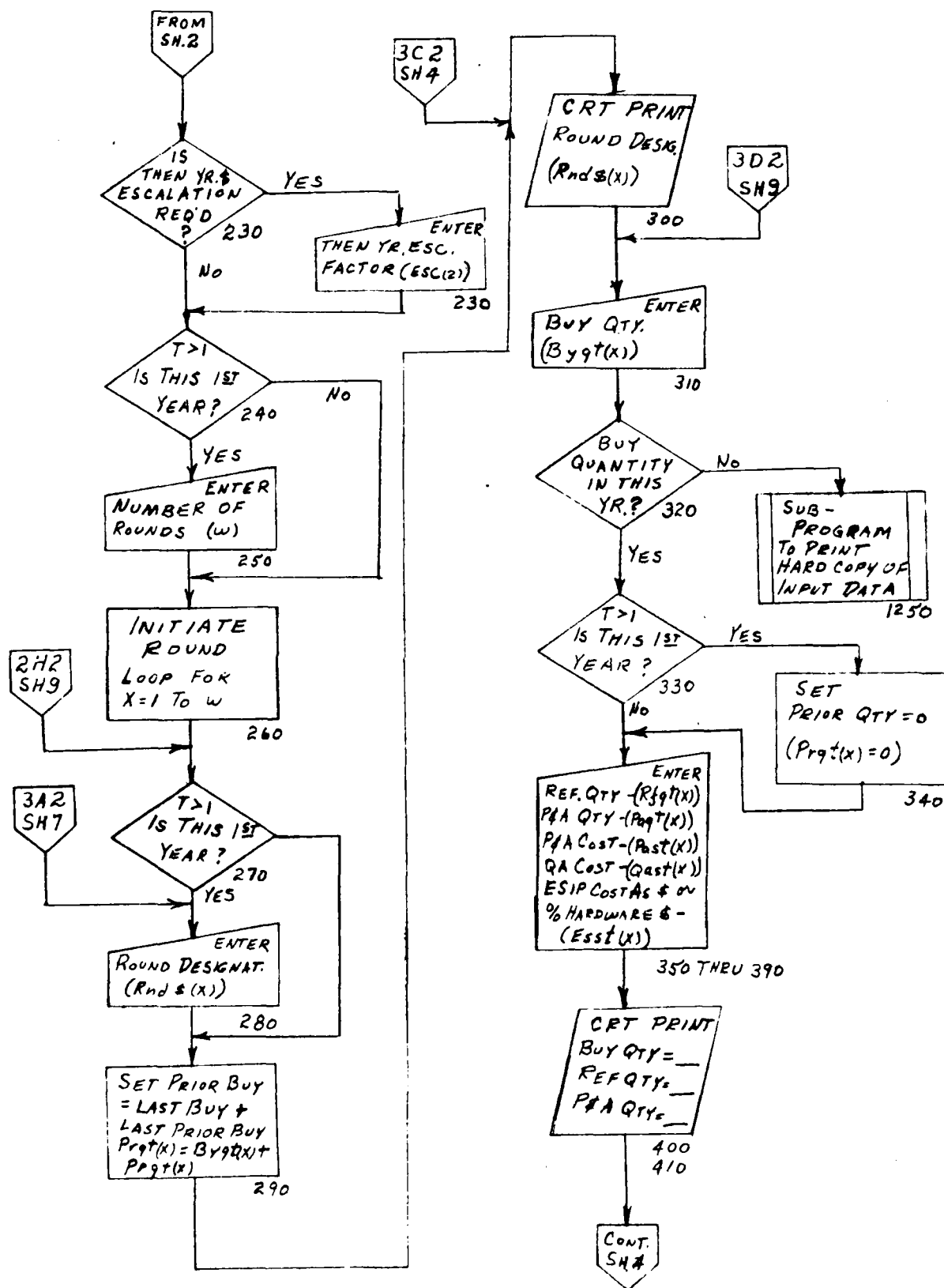
FLOW CHART

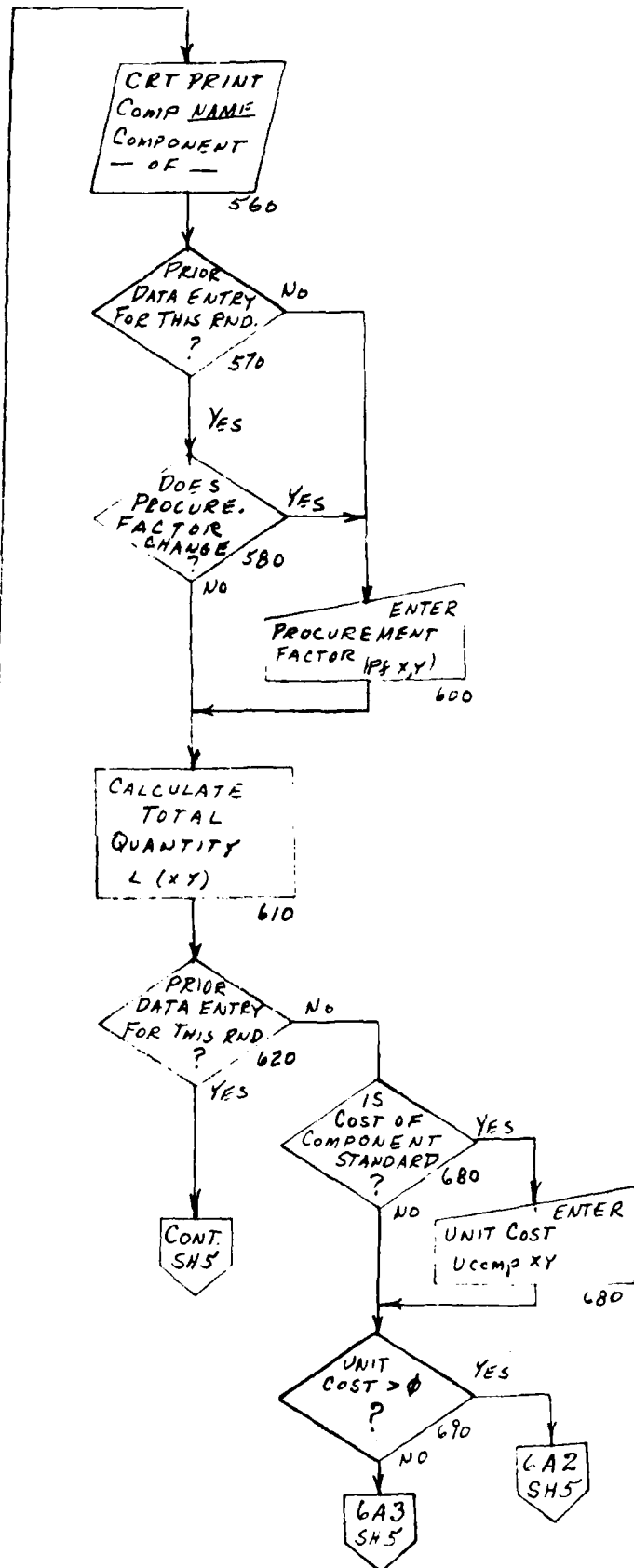
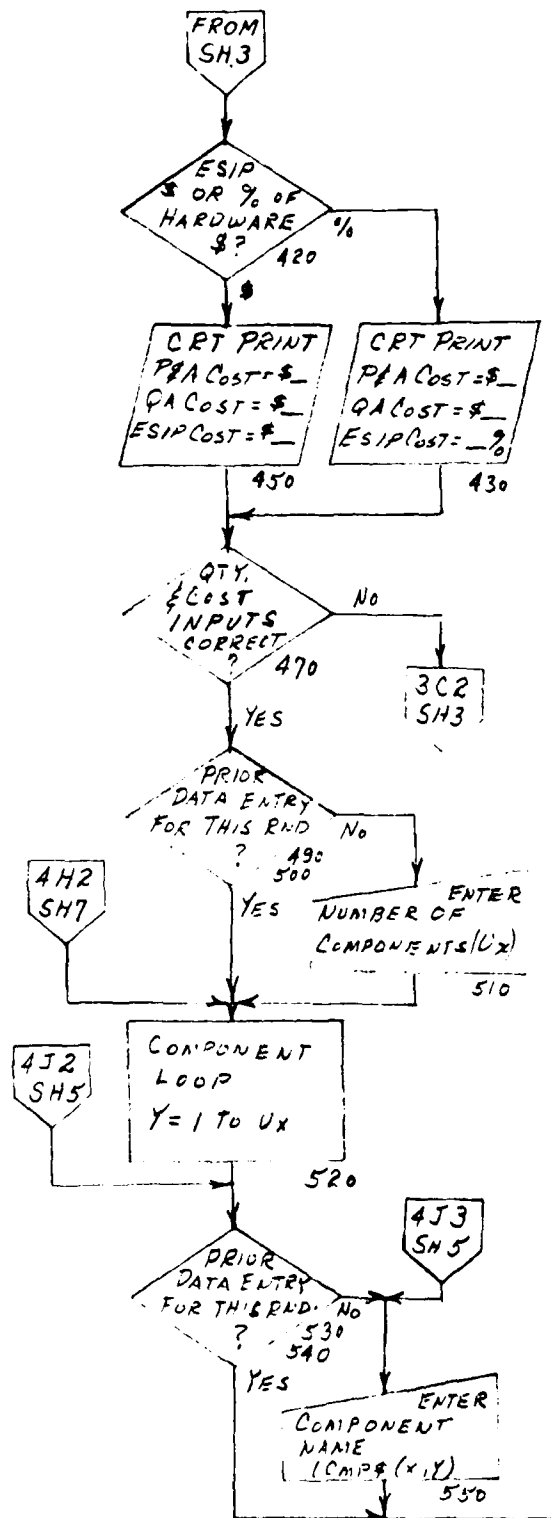
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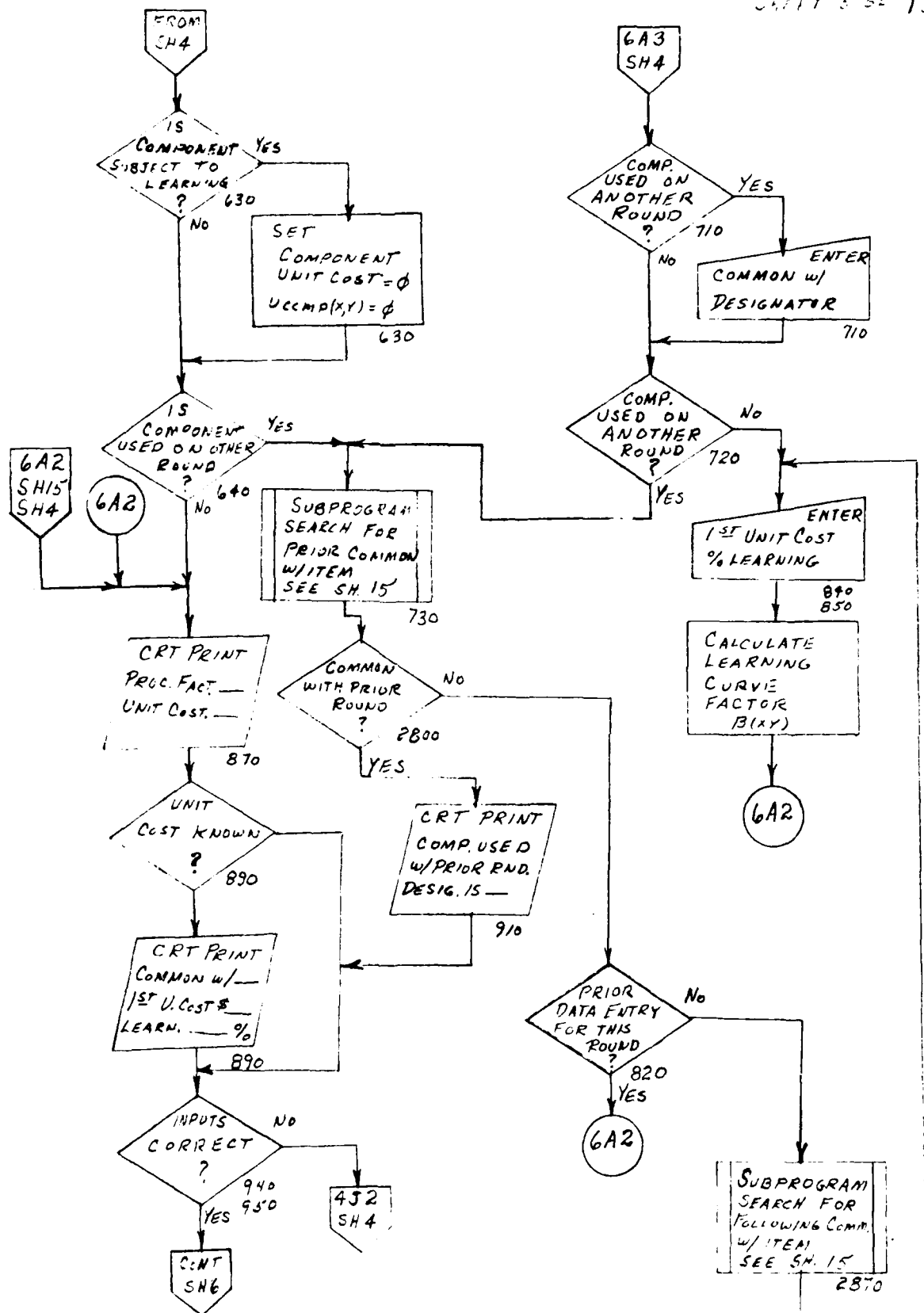
APPENDIX-A-1

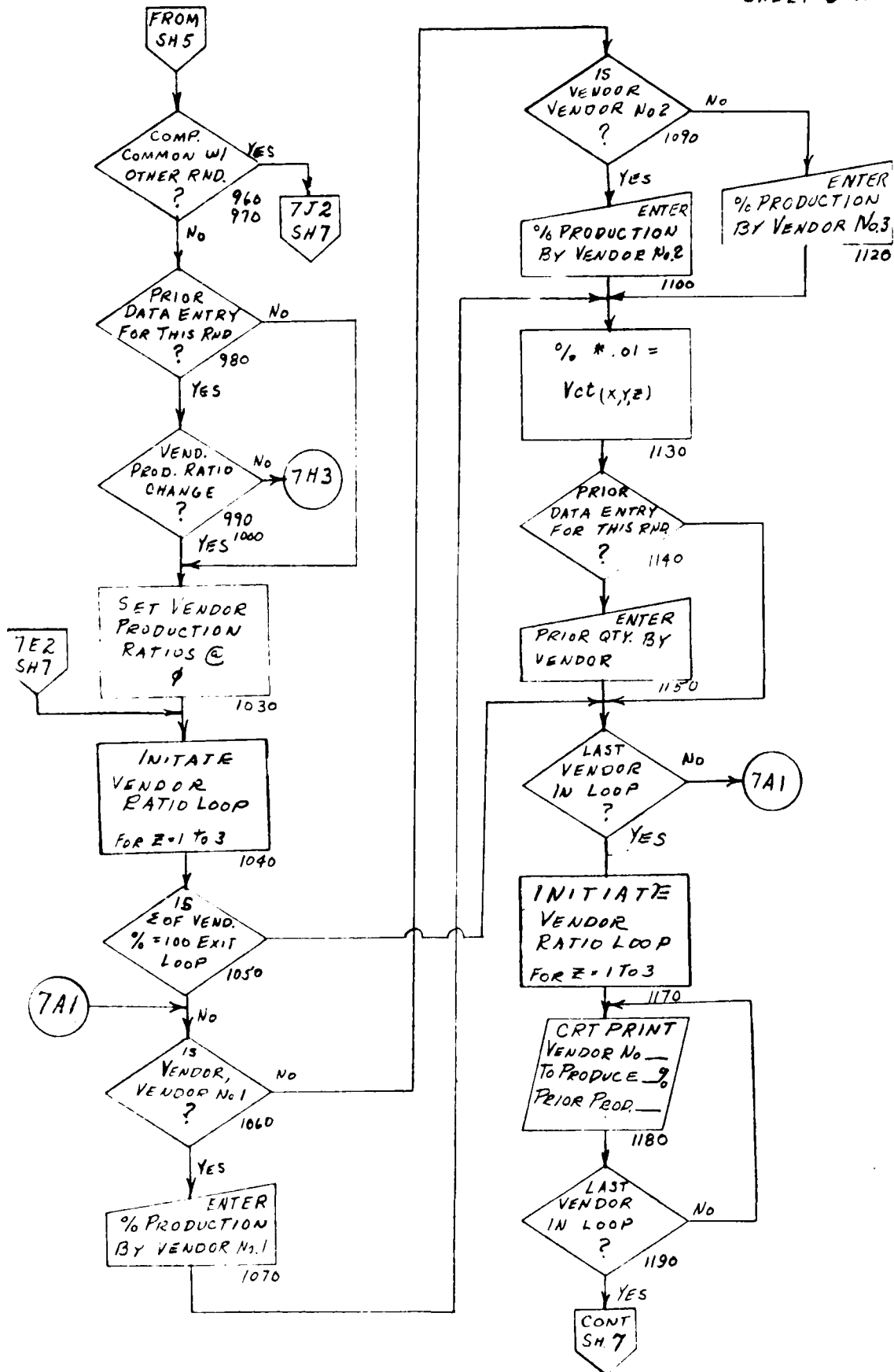


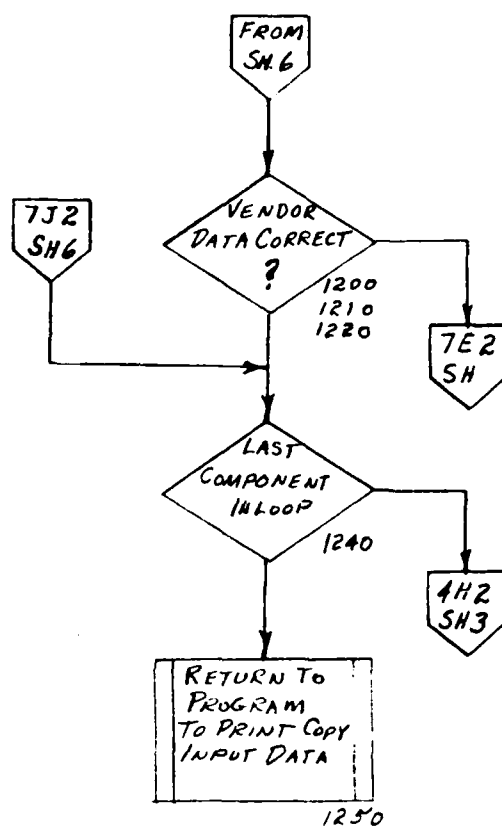


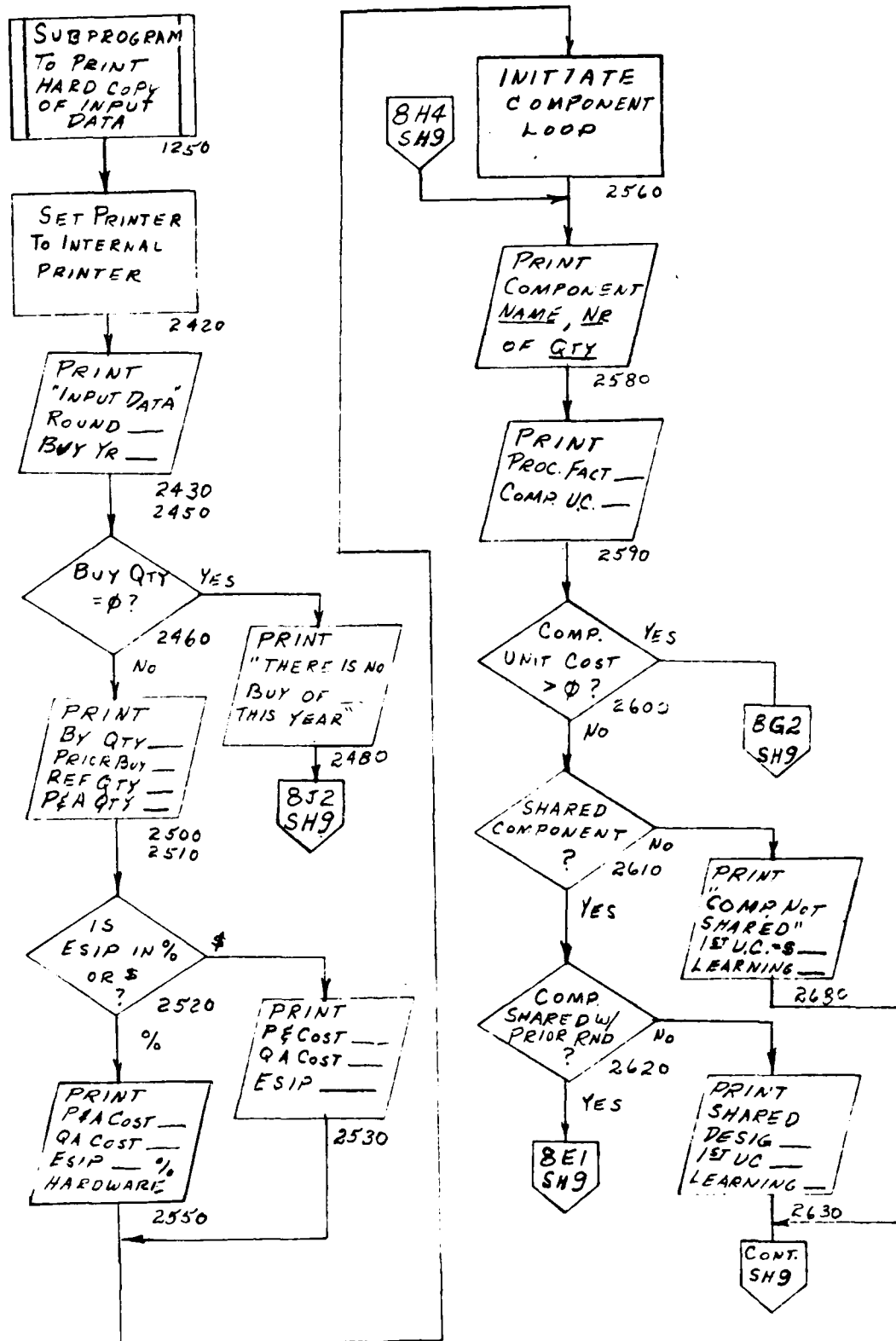


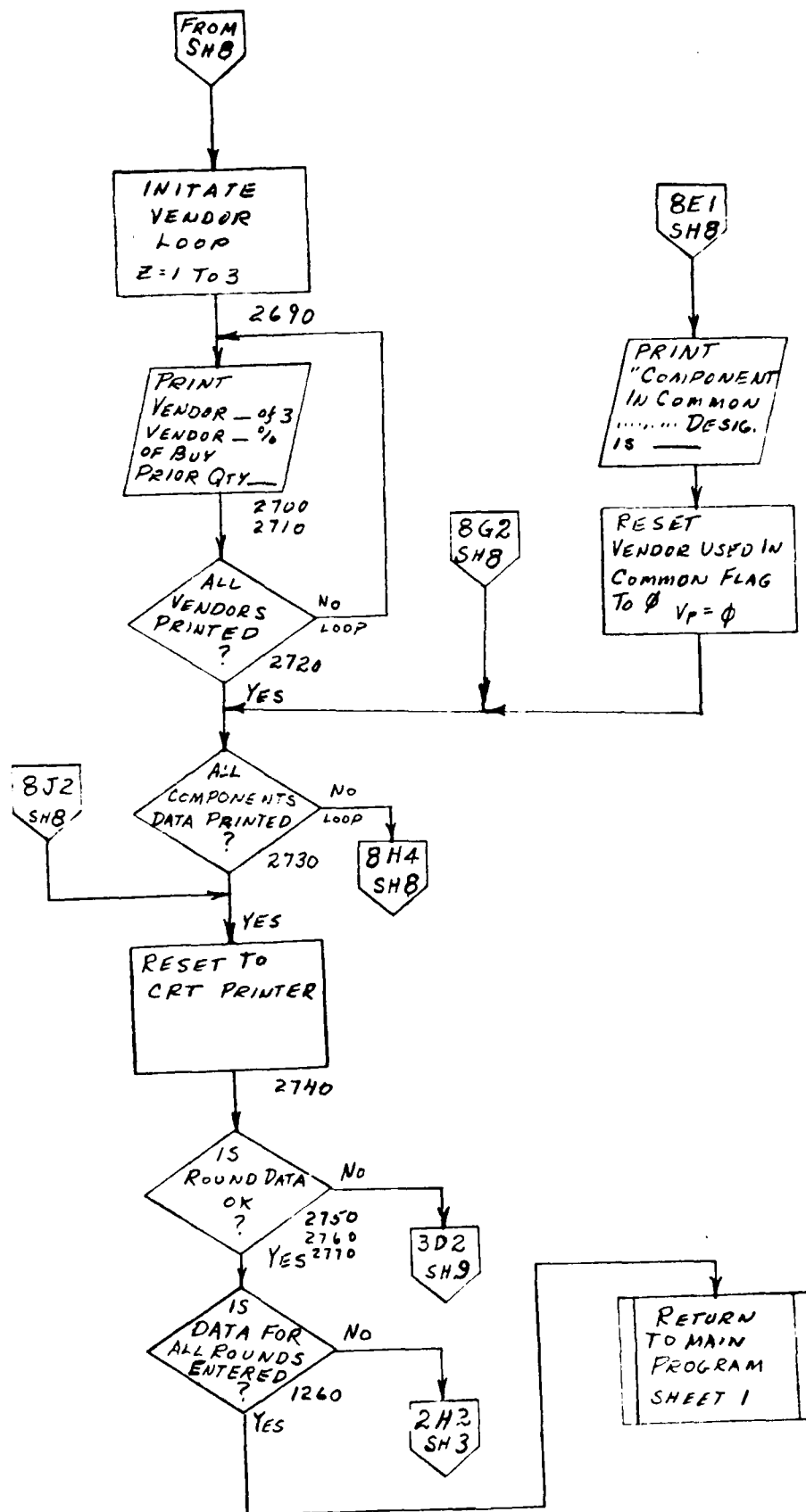


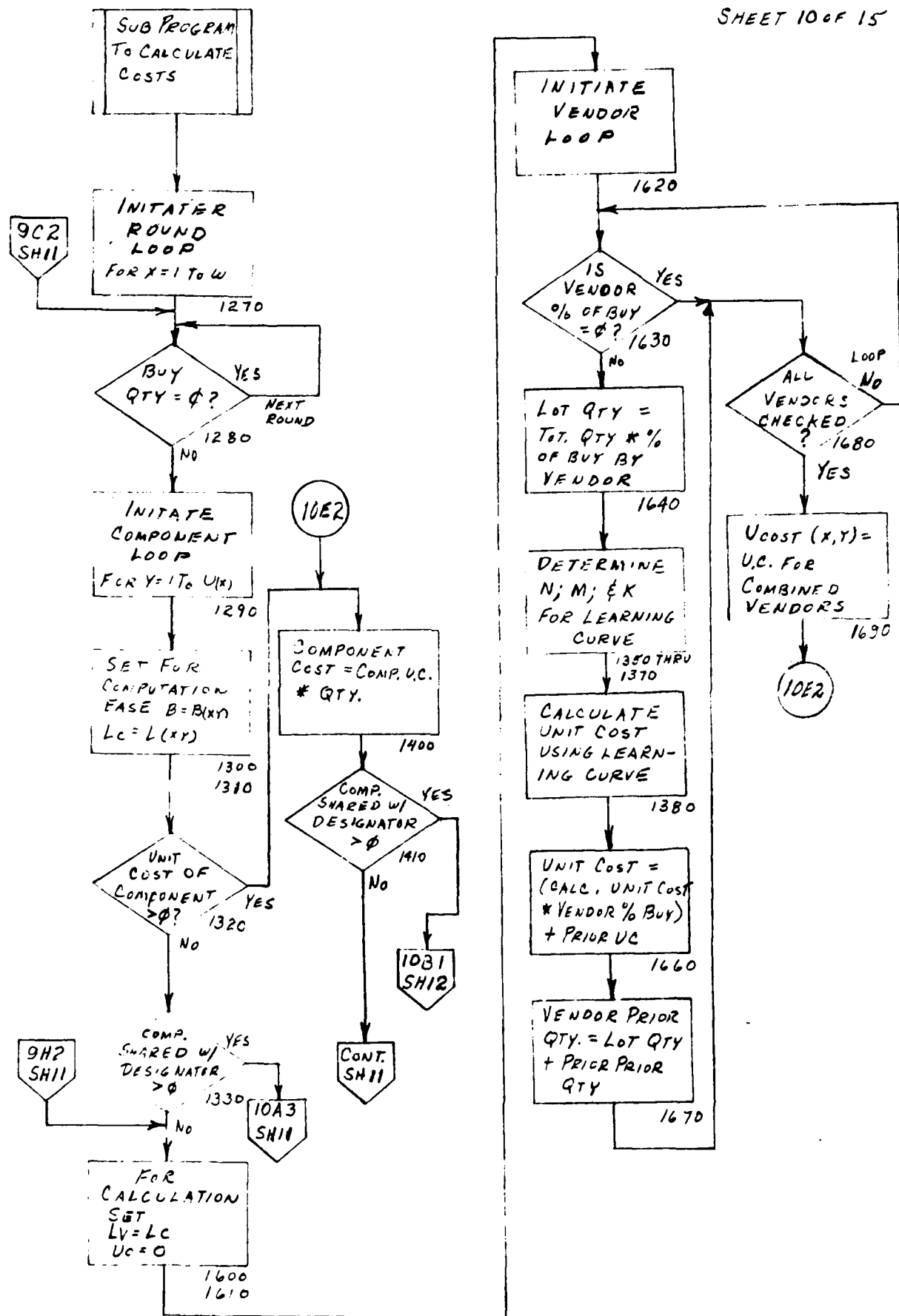


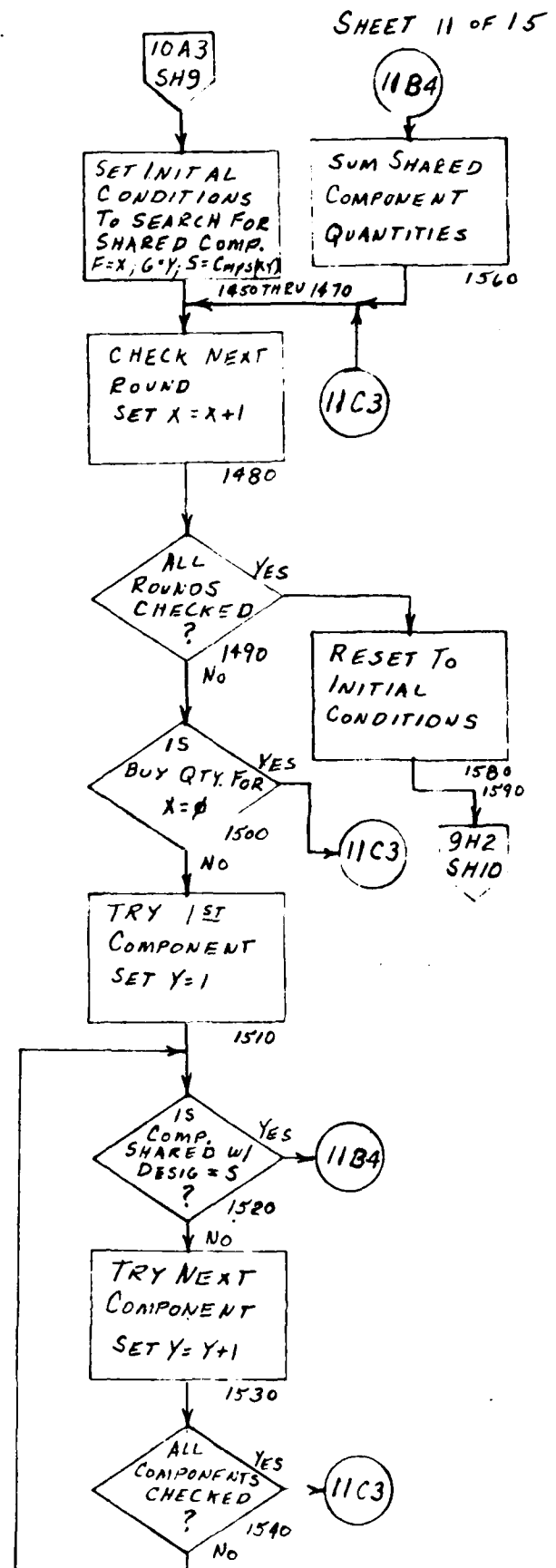
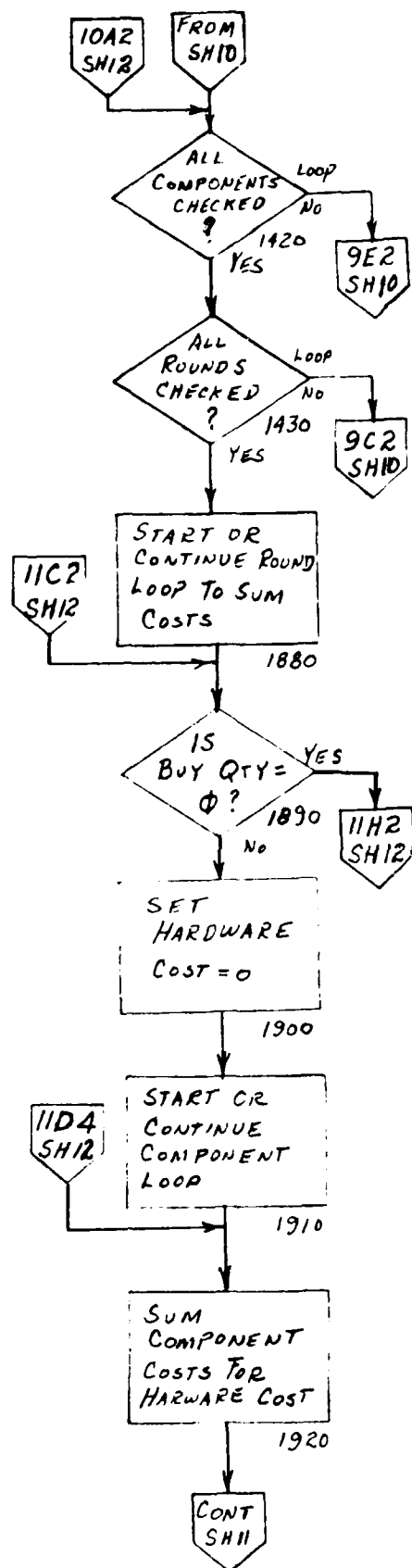


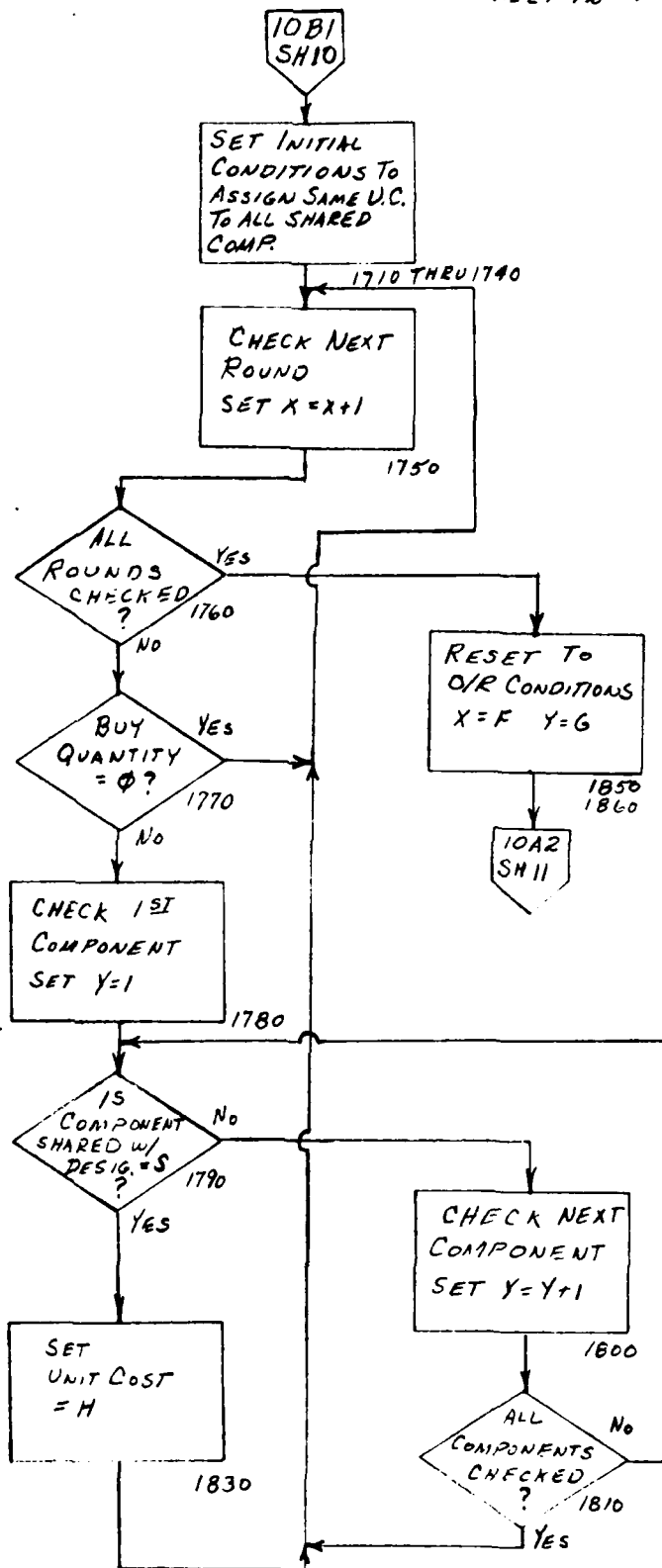
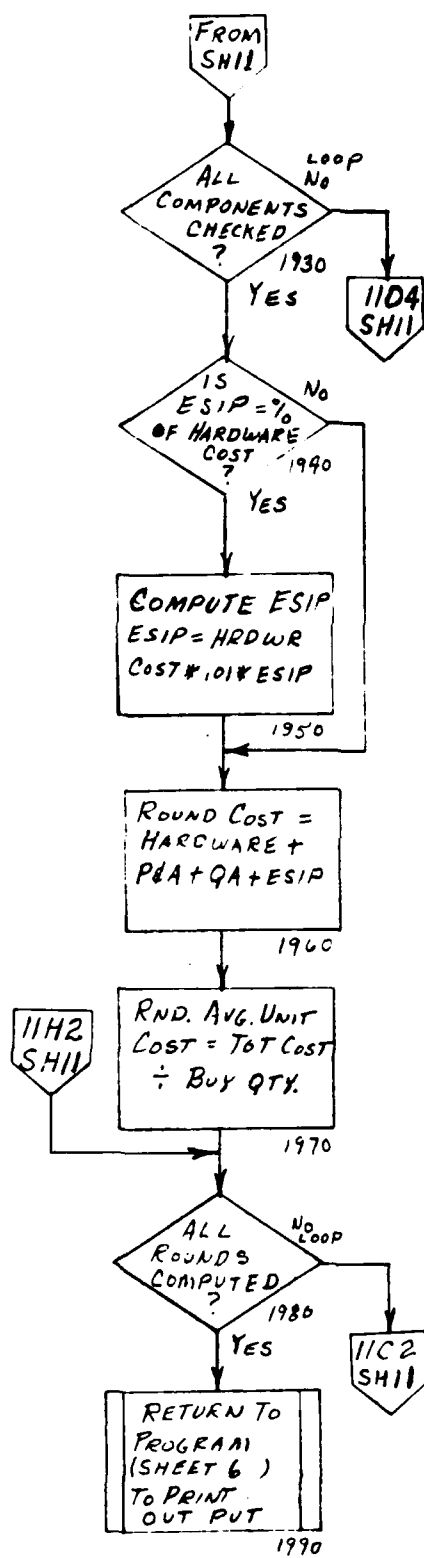


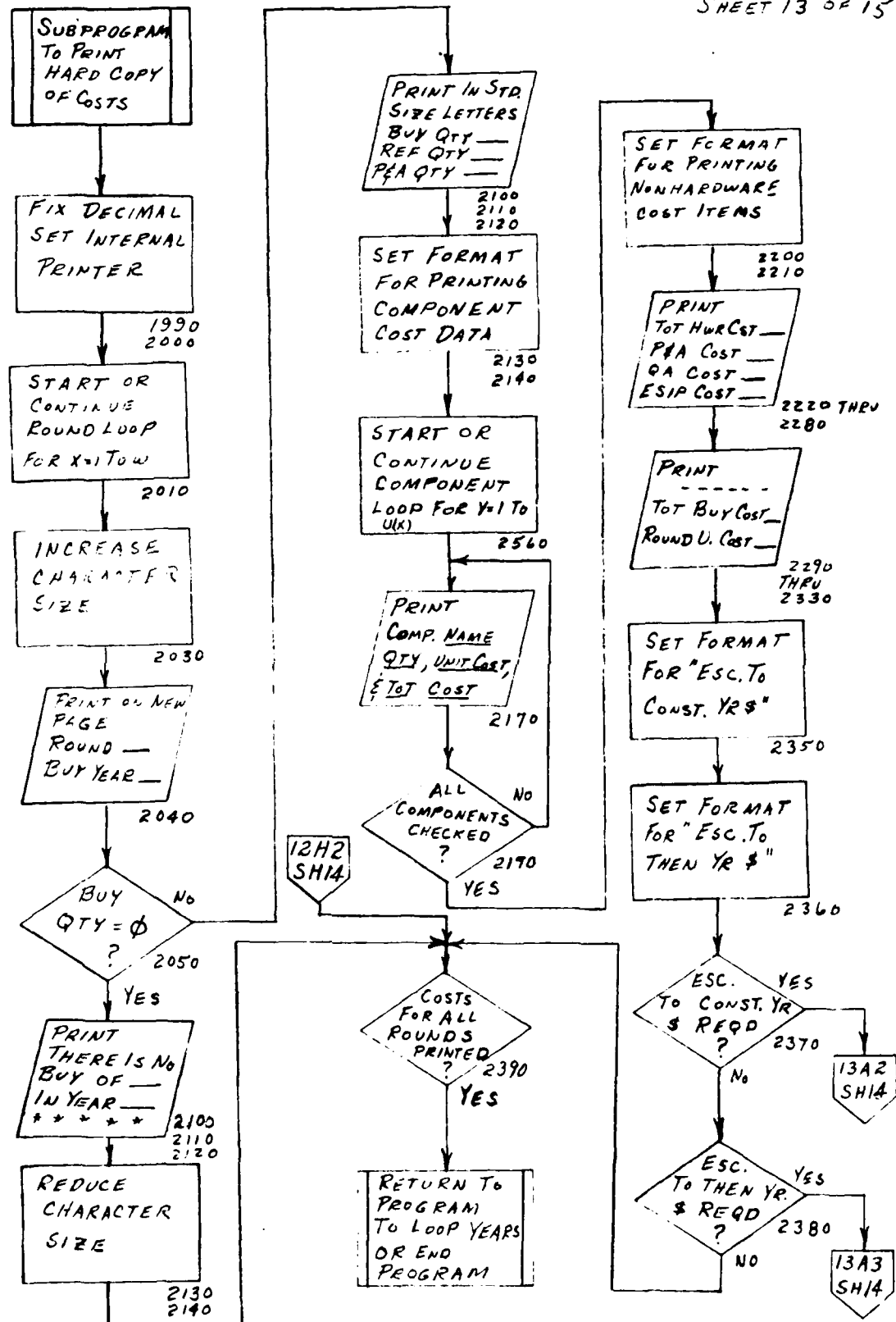


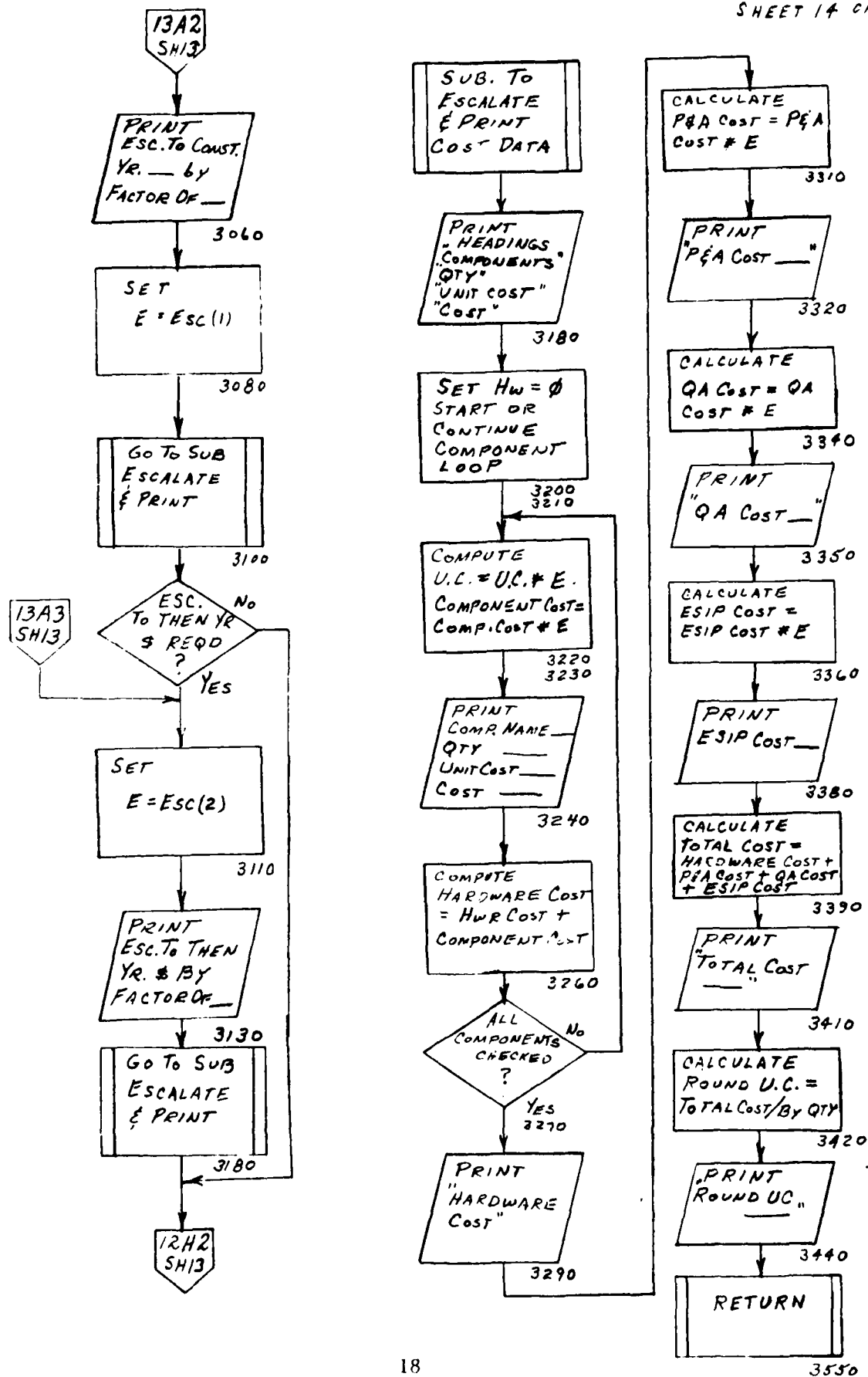


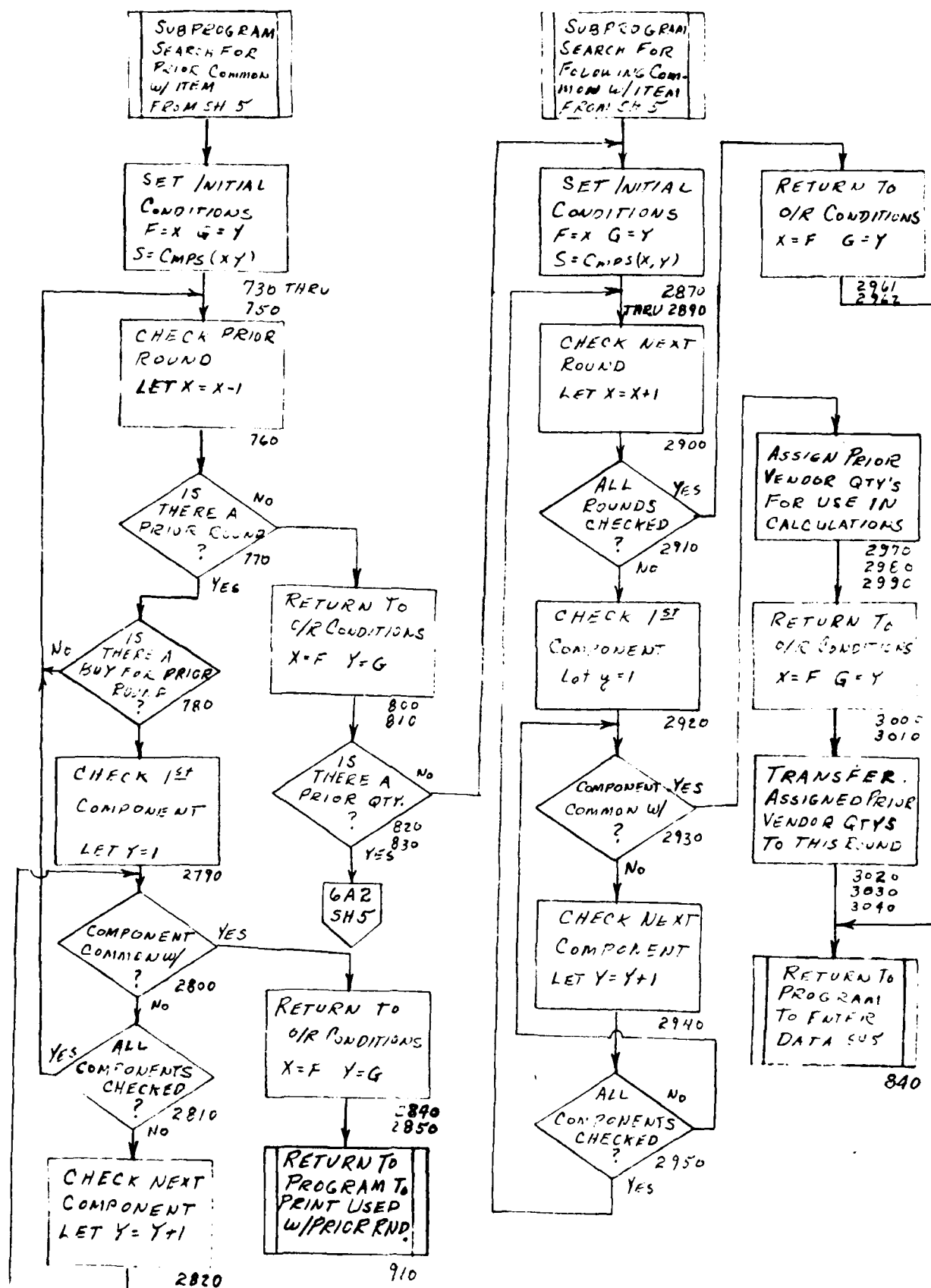












APPENDIX B

DATA SHEET, INPUT DATA
AND TYPICAL PRINTOUT

DATA SHEET YEAR <u> </u> OF <u> </u> ESCALATE TO CONST. Yr. <u> </u> \$ BY FACTOR OF <u> </u> ESCALATE TO "THEN" Yr. <u> </u> BY FACTOR OF <u> </u> BUY Yr. <u> </u> ROUND <u> </u> OF <u> </u> ROUND DESIGNATION <u> </u>											
BUY QTY. <u> </u>			REF. QTY. <u> </u>			P&A QTY. <u> </u>					
P&A COST \$ <u> </u>			QA COST \$ <u> </u>			ESIP COST \$ <u> </u>			OR <u> </u> X		
NUMBER OF COMPONENTS <u> </u>											
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
COMPONENT DESIGNATION:											
PROC. FACTOR <u> </u> Z				UNIT COST \$ <u> </u>							
COMMON W/DESIG. <u> </u>				1st.U. COST \$ <u> </u>							
Z LEARNING <u> </u>											
VENDOR No. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
Z OF BUY <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	
PRIOR QTY. <u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>		<u> </u>	

INPUT DATA

ROUND XM829

BUY YEAR 1985

BUY QTY= 41000

PRIOR BUY QTY= 9000

REF QTY= 1290

P&A QTY= 4654

P&A COST=\$ 242985

Q A COST=\$ 13660

ESIP COST= 4 % HARDWARE COST

LAP

COMPONENT 1 OF 9

PROCUREMENT FACT. 3 %

COMPONENT NOT SHARED

VENDOR 1 OF 3

% OF BUY BY VENDOR 100 %

VENDOR 2 OF 3

% OF BUY BY VENDOR 0 %

VENDOR 3 OF 3

% OF BUY BY VENDOR 0 %

MPTS

COMPONENT 2 OF 9

PROCUREMENT FACT. 4 %

COMPONENT NOT SHARED

VENDOR 1 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 2 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 3 OF 3

% OF BUY BY VENDOR 0 %

CORE

COMPONENT 3 OF 9

PROCUREMENT FACT. 4 %

COMPONENT NOT SHARED

VENDOR 1 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 2 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 3 OF 3

% OF BUY BY VENDOR 0 %

CRTG CASE

COMPONENT 4 OF 9

PROCUREMENT FACT. 5 %

SHARED DESIG. 1

1st UC=\$ 86.26

VENDOR 1 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 2 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 3 OF 3

% OF BUY BY VENDOR 0 %

PROP CHARGE

COMPONENT 5 OF 9

PROCUREMENT FACT. 4 %

C BASE & SEAL

COMPONENT 6 OF 9

PROCUREMENT FACT. 2 %

SHARED DESIG. 2

1st UC=\$ 354.01

VENDOR 1 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 2 OF 3

% OF BUY BY VENDOR 50 %

VENDOR 3 OF 3

% OF BUY BY VENDOR 0 %

PRIMER

COMPONENT 7 OF 9

PROCUREMENT FACT. 3 %

TRACER

COMPONENT 8 OF 9

COMP. UC=\$ 0

1st UC=\$ 1251.7

LEARNING= 90 %

PRIOR QTY BY VENDOR 12246.7

PRIOR QTY BY VENDOR 0

PRIOR QTY BY VENDOR 0

COMP. UC=\$ 0

1st UC=\$ 1055.29

LEARNING= 90 %

PRIOR QTY BY VENDOR 6182.8

PRIOR QTY BY VENDOR 6182.8

PRIOR QTY BY VENDOR 0

COMP. UC=\$ 0

1st UC=\$ 2409.88

LEARNING= 90 %

PRIOR QTY BY VENDOR 6182.8

PRIOR QTY BY VENDOR 6182.8

PRIOR QTY BY VENDOR 0

COMP. UC=\$ 0

LEARNING= 90 %

PRIOR QTY BY VENDOR 23262.75

PRIOR QTY BY VENDOR 23262.75

PRIOR QTY BY VENDOR 0

COMP. UC=\$ 170.14

COMP. UC=\$ 0

LEARNING= 90 %

PRIOR QTY BY VENDOR 28159.65

PRIOR QTY BY VENDOR 28159.65

PRIOR QTY BY VENDOR 0

COMP. UC=\$ 6.61

PROCUREMENT FACT. 5 %

COMP. UC=\$ 1.14

PACKAGING COMPONENT 9 OF 9

PROCUREMENT FACT. 3 %

COMP. UC=\$ 0

SHARED DESIG. 3 1st UC=\$ 143.94

LEARNING= 90 %

VENDOR 1 OF 3

PRIOR QTY BY VENDOR 22819.65

% OF BUY BY VENDOR 50 %

VENDOR 2 OF 3

PRIOR QTY BY VENDOR 22819.65

% OF BUY BY VENDOR 50 %

VENDOR 3 OF 3

PRIOR QTY BY VENDOR 0

% OF BUY BY VENDOR 0 %

ROUND,

XM829

BUY YEAR 1985

BUY QUANTITY, 41000

REFERENCE QUANTITY, 1290

P&A QUANTITY, 4654

<u>COMPONENT</u>	<u>QTY.</u>	<u>UNIT COST</u>	<u>COST</u>
LAP	48352.	\$ 51.78	\$ 2503711.77
MPTS	48822.	\$ 240.87	\$ 11759466.42
CORE	48822.	\$ 550.04	\$ 26854137.67
CRTG CASE	49291.	\$ 15.91	\$ 784188.61
PROP CHARGE	48822.	\$ 170.14	\$ 8306534.25
C BASE & SEAL	47883.	\$ 61.24	\$ 2932248.60
PRIMER	48352.	\$ 6.61	\$ 319608.84
TRACER	49291.	\$ 1.14	\$ 56191.97
PACKAGING	48352.	\$ 26.63	\$ 1287389.70
TOTAL HARDWARE COST,			\$ 54803477.83
P&A COST,			\$ 242985.00
QA COST,			\$ 13660.00
ESIP COST,			\$ 2192139.11
TOTAL BUY COST,			\$ 57252261.94

ROUND UNIT COST, \$ 1396.40

ESCALATED TO CONSTANT FY 1984.00 DOLLARS BY FACTOR OF 1.18

<u>COMPONENT</u>	<u>QTY.</u>	<u>UNIT COST</u>	<u>COST</u>
LAP	48352.	\$ 61.20	\$ 2959136.94
MPTS	48822.	\$ 284.68	\$ 13898513.36
CORE	48822.	\$ 650.10	\$ 31738905.31
CRTG CASE	49291.	\$ 18.80	\$ 926832.52
PROP CHARGE	48822.	\$ 201.09	\$ 9817492.83
C BASE & SEAL	47883.	\$ 72.36	\$ 3465624.62
PRIMER	48352.	\$ 7.81	\$ 377745.68
TRACER	49291.	\$ 1.35	\$ 66413.29
PACKAGING	48352.	\$ 31.47	\$ 1521565.89
TOTAL HARDWARE COST			\$ 64772230.44
P&A COST			\$ 287183.97
QA COST			\$ 16144.75
ESIP COST			\$ 2590889.22
TOTAL BUY COST			\$ 67666448.39
ROUND UNIT COST, \$ 1650.40			
ESCALATED TO THEN YR DOLLARS BY FACTOR OF 1.24			

<u>COMPONENT</u>	<u>QTY.</u>	<u>UNIT COST</u>	<u>COST</u>
LAP	48352.	\$ 64.05	\$ 3096841.09
MPTS	48822.	\$ 297.93	\$ 14545284.02
CORE	48822.	\$ 680.35	\$ 33215882.88
CRTG CASE	49291.	\$ 19.68	\$ 969962.89
PROP CHARGE	48822.	\$ 210.45	\$ 10274352.21
C BASE & SEAL	47883.	\$ 75.75	\$ 3626898.29
PRIMER	48352.	\$ 8.18	\$ 395324.17
TRACER	49291.	\$ 1.41	\$ 69503.85
PACKAGING	48352.	\$ 32.93	\$ 1592372.33
TOTAL HARDWARE COST			\$ 67786421.72
P&A COST			\$ 300548.15
QA COST			\$ 16896.05
ESIP COST			\$ 2711456.87
TOTAL BUY COST			\$ 70815322.79
ROUND UNIT COST, \$ 1727.20			

APPENDIX C

SOFTWARE

```

10  OPTION BASE 1
20  PRINTER IS 16
30  PRINT "YR PROGRAM"
40  STANDARD
50  DIM Rnd$(8),Byqt(8),Prqt(8),Rfqt(8),Paqt(8),Yr(25)
60  DIM Past(8),Qast(8),Esst(8),U(8),Ba(8,10),Vt(8,10,3),Vp(8,10)
70  DIM Cmp$(8,10)[15],Pf(8,10),Uccmp(8,10),Cmps(8,10),Iuc(8,10)
80  DIM Vpqt(8,10,3),Vct(8,10,3),B(8,10),L(8,10),V(8,10)
90  INPUT "ENTER NUMBER OF YEARS CONSIDERED",Sy
100 INPUT "ESCALATION TO CONSTANT YR $ REQD ? YES ? ENTER YEAR. NO ? ENTER 0."
    ,Yrc
110 IF Yrc=0 THEN 130
120 INPUT "ENTER ESCALATION FACTOR.",Esc(1)
130 FOR T=1 TO Sy
140 IF T>1 THEN 170
150 INPUT "ENTER 1st YEAR CONSIDERED",Yrs
160 GOTO 200
170 Yrs=Yrs+1
180 PRINTER IS 16
190 STANDARD
200 PRINT " ",Yrs,"YEAR";T;"OF";Sy,LIN(1)
210 INPUT "ESCALATION TO THEN YR $ REQD ? YES ? ENTER FACTOR. NO ? ENTER 0.",E
    sc(2)
220 IF T>1 THEN 240
230 INPUT "ENTER NUMBER OF ROUNDS CONSIDERED.",W
240 FOR X=1 TO W
250 IF T>1 THEN 270
260 INPUT "ENTER ROUND DESIGNATION.",Rnd$(X)
270 Prqt(X)=Byqt(X)+Prqt(X)
280 PRINT Rnd$(X)
290 INPUT "ENTER BUY QUANTITY",Byqt(X)
300 IF Byqt(X)=0 THEN 1020
310 IF T>1 THEN 330
320 INPUT "ENTER PRIOR BUY QUANTITY.",Prqt(X)
330 INPUT "ENTER REFERENCE QUANTITY.",Rfqt(X)
340 INPUT "ENTER PROOF & ACCEPTANCE QUANTY.",Paqt(X)
350 INPUT "ENTER PROOF & ACCEPTANCE COST.",Past(X)
360 INPUT "ENTER QA COST.",Qast(X)
370 INPUT "ENTER ESIP COST, IF % OF HARDWARE ENTER %.",Esst(X)
380 PRINT "BUY QTY.=";Byqt(X),"PRIOR BUY QTY.=";Prqt(X)
390 PRINT "REF. QTY.=";Rfqt(X),"P&A QTY.=";Paqt(X)
400 IF Esst(X)<100 THEN 430
410 PRINT "P&A COST=";Past(X),"QA COST=";Qast(X),"ESIP COST=";Esst(X),LIN(1)
    )
420 GOTO 440
430 PRINT "P&A COST=";Past(X),"QA COST=";Qast(X),"ESIP COST=";Esst(X);"%",LI
    N(1)
440 INPUT "ARE INPUTS CORRECT ? 1=YES,0=NO",Ans
450 IF Ans<>1 THEN 200
460 IF Prqt(X)=0 THEN 480
470 IF T>1 THEN 490
480 INPUT "ENTER THE NUMBER OF COMPENENTS.",U(X)
490 FOR Y=1 TO U(X)
500 IF Prqt(X)=0 THEN 520
510 IF T>1 THEN 530
520 INPUT "ENTER COMPONENT NAME.",Cmp$(X,Y)
530 PRINT Cmp$(X,Y),"COMPONENT ";Y;"OF";U(X)
540 INPUT "ENTER PROCUREMENT FACTOR",Pf(X,Y)
550 L(X,Y)=(Byqt(X)+Rfqt(X)+Paqt(X))*(1+.01*Pf(X,Y))
560 INPUT "ENTER COMPONENT UNIT COST,ENTER 0 IF UNKNOWN",Uccmp(X,Y)
570 IF Uccmp(X,Y)>0 THEN 730
580 INPUT "OTHER RND.SHARE COMPONENT? NO=0,IF YES ENTER SHARED DESIG",Cmps(X,Y)
    )
590 IF Cmps(X,Y)=0 THEN 700
600 F=X
610 G=Y

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620 S=Cmps(X,Y)
630 X=X-1
640 IF X=0 THEN 670
650 IF Byqt(X)=0 THEN 630
660 GOTO 2520
670 X=F
680 Y=G
690 IF Prqt(X)=0 THEN 2600
700 INPUT "ENTER 1ST. UNIT COST",Iuc(X,Y)
710 INPUT "ENTER % LEARNING.",Ba(X,Y)
720 B(X,Y)=(-2+LGT(Ba(X,Y)))/LGT(2)
730 PRINT "PROCUREMENT FACT.":Pf(X,Y);"%","COMP. UC=$":Uccmp(X,Y)
740 IF Uccmp(X,Y)>0 THEN 790
750 PRINT "COMPONENT COMMON":Cmps(X,Y),"1st UC=$":Iuc(X,Y),"LEARN.":Ba(X,Y);"%
",LIN(1)
760 GOTO 790
770 PRINT "COMPONENT USED IN COMMON WITH PRIOR ROUND".
780 Vp(X,Y)=1
790 INPUT "ARE THE INPUTS CORRECT ? 1=YES,0=NO",Ans
800 IF Ans=0 THEN 520
810 IF Vp(X,Y)=1 THEN 1000
820 IF Uccmp(X,Y)>0 THEN 1000
830 FOR Z=1 TO 3
840 IF Z>1 THEN 870
850 INPUT "VENDOR No1 TO MFG. WHAT % OF BUY ?",Vt(X,Y,Z)
860 GOTO 910
870 IF Z>2 THEN 900
880 INPUT "VENDOR 2 TO MFG. WHAT % OF BUY ?",Vt(X,Y,Z)
890 GOTO 910
900 INPUT "VENDOR 3 TO MFG. WHAT % OF BUY ?",Vt(X,Y,Z)
910 Vct(X,Y,Z)=Vt(X,Y,Z)*.01
920 IF T>1 THEN 940
930 INPUT "PRIOR PRODUCTION BY VENDOR ?",Vpqt(X,Y,Z)
940 NEXT Z
950 FOR Z=1 TO 3
960 PRINT "VENDOR";Z;"TO PRODUCE":Vt(X,Y,Z);"% OF BUY. PRIOR PRODUCTION=":Vpqt
(X,Y,Z)
970 NEXT Z
980 INPUT "ARE THE INPUTS CORRECT ? 1=YES,0=NO",Ans
990 IF Ans=0 THEN 030
1000 PRINT
1010 NEXT Y
1020 GOSUB 2160
1030 NEXT X
1040 FOR X=1 TO W
1050 IF Byqt(X)=0 THEN 1200
1060 FOR Y=1 TO U(X)
1070 B=B(X,Y)
1080 Lc=L(X,Y)
1090 IF Uccmp(X,Y)>0 THEN 1170
1100 IF Cmps(X,Y)>0 THEN 1220
1110 GOTO 1370
1120 N=Vpqt(X,Y,Z)+.5
1130 M=Lc+N
1140 K=(Lc*(B+1)/(M*(B+1)-N*(B+1)))^(1/-B)
1150 Uccmp(X,Y)=Iuc(X,Y)*K^B
1160 GOTO 1430
1170 Cpst(X,Y)=Uccmp(X,Y)*L(X,Y)
1180 IF Cmps(X,Y)>0 THEN 1400
1190 NEXT Y
1200 NEXT X
1210 GOTO 1650
1220 F=X
1230 G=Y
1240 S=Cmps(X,Y)
1250 X=X+1

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1260 IF X>W THEN 1350
1270 IF Byqt(X)=0 THEN 1250
1280 Y=1
1290 IF S=Cmps(X,Y) THEN 1330
1300 Y=Y+1
1310 IF Y>U(X) THEN 1250
1320 GOTO 1290
1330 Lc=L(X,Y)+Lc
1340 GOTO 1250
1350 X=F
1360 Y=G
1370 Lv=Lc
1380 Uc=0
1390 FOR Z=1 TO 3
1400 IF Vct(X,Y,Z)=0 THEN 1450
1410 Lc=Lv+Vct(X,Y,Z)
1420 GOTO 1120
1430 Uc=Uccmp(X,Y)+Vct(X,Y,Z)+Uc
1440 Vpqt(X,Y,Z)=Lc+Vpqt(X,Y,Z)
1450 NEXT Z
1460 Uccmp(X,Y)=Uc
1470 GOTO 1170
1480 F=X
1490 G=Y
1500 S=Cmps(X,Y)
1510 H=Uccmp(X,Y)
1520 X=X+1
1530 IF X>W THEN 1620
1540 IF Byqt(X)=0 THEN 1520
1550 Y=1
1560 IF S=Cmps(X,Y) THEN 1600
1570 Y=Y+1
1580 IF Y>U(X) THEN 1520
1590 GOTO 1560
1600 Uccmp(X,Y)=H
1610 GOTO 1520
1620 X=F
1630 Y=G
1640 GOTO 1190
1650 FOR X=1 TO W
1660 IF Byqt(X)=0 THEN 1750
1670 Hust(X)=0
1680 FOR Y=1 TO U(X)
1690 Hust(X)=Hust(X)+Cpst(X,Y)
1700 NEXT Y
1710 IF Esst(X)>100 THEN 1730
1720 East(X)=Hust(X)*.01*East(X)
1730 Rdst(X)=Hust(X)+Past(X)+Qast(X)+Esst(X)
1740 Rst(X)=Rdst(X)/Byqt(X)
1750 NEXT X
1760 FIXED 2
1770 PRINTER IS 0
1780 FOR X=1 TO W
1790 STANDARD
1800 ES=CHR$(27)
1810 PRINT PAGE,ES;"&k1$ROUND,";Rnds(X);"BUY YEAR ";Yrs,LIN(2)
1820 IF Byqt(X)>0 THEN 1870
1830 PRINT
1840 PRINT "THERE IS NO BUY OF ";Rnds(X);" IN YEAR";Yrs
1850 PRINT ES;"&k0$*****"
1860 GOTO 2130
1870 PRINT ES;"&k0$BUY QUANTITY,";Byqt(X),LIN(1)
1880 PRINT "REFERENCE QUANTITY,";Rfqt(X),LIN(1)
1890 PRINT "P&A QUANTITY,";Paqt(X),LIN(1)
1900 IMAGE 16A3X,6D.11X"s",5D.2D8X"s",10D.2D
1910 PRINT "COMPONENT"," QTY.," " UNIT COST","COST"

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1920 PRINT
1930 FOR Y=1 TO U(X)
1940 PRINT USING 1900;Cmp$(X,Y),L(X,Y),Uccmp(X,Y),Cpst(X,Y)
1950 PRINT
1960 NEXT Y
1970 IMAGE 20A34X"$",10D.2D
1980 PRINT TAB(57),"-----"
1990 PRINT USING 1970;"TOTAL HARDWARE COST,";Hwst(X)
2000 PRINT
2010 PRINT USING 1970;"P&A COST,";Past(X)
2020 PRINT
2030 PRINT USING 1970;"QA COST,";Qast(X)
2040 PRINT
2050 PRINT USING 1970;"ESIP COST,";Esst(X)
2060 PRINT TAB(57),"-----"
2070 PRINT USING 1970;"TOTAL BUY COST,";Rdst(X)
2080 PRINT
2090 FIXED 2
2100 PRINT "ROUND UNIT COST, $",Rst(X)
2110 IF Yrc<>0 THEN 2790
2120 IF Esc(2)<>0 THEN 2813
2130 NEXT X
2140 NEXT T
2150 STOP
2160 PRINTER IS 0
2170 PRINT PAGE,TAB(35),"INPUT DATA",LIN(1)
2180 STANDARD
2190 PRINT "ROUND ";Rnd$(X),"BUY YEAR";Yrs,LIN(1)
2200 IF Byqt(X)=0 THEN 2220
2210 GOTO 2240
2220 PRINT "THERE IS NO BUY OF ";Rnd$(X);" THIS YEAR."
2230 GOTO 2480
2240 PRINT "BUY QTY=";Byqt(X),"PRIOR BUY QTY=";Prqt(X)
2250 PRINT "REF QTY=";Rfqt(X),"P&A QTY=";Paqt(X)
2260 IF Esst(X)<100 THEN 2290
2270 PRINT "P&A COST=";Past(X),"Q A COST=";Qast(X),"ESIP COST=";Esst(X),LIN(1)
2280 GOTO 2300
2290 PRINT "P&A COST=";Past(X),"Q A COST=";Qast(X),"ESIP COST=";Esst(X);"% HA
RDWARE COST",LIN(1)
2300 FOR Y=1 TO U(X)
2310 PRINT
2320 PRINT Cmp$(X,Y),"COMPONENT";Y;"OF";U(X)
2330 PRINT "PROCUREMENT FACT. ";Pf(X,Y);"%","COMP. UC=";Uccmp(X,Y)
2340 IF Uccmp(X,Y)>0 THEN 2470
2350 IF Cmps(X,Y)=0 THEN 2420
2360 IF Vp(X,Y)<>0 THEN 2390
2370 PRINT "SHARED DESIG.";Cmps(X,Y),"1st UC=";Iuc(X,Y),"LEARNING=";Ba(X,Y);"%
"
2380 GOTO 2430
2390 PRINT "COMPONENT SHARED WITH PRIOR ROUND "
2400 Vp(X,Y)=0
2410 GOTO 2470
2420 PRINT "COMPONENT NOT SHARED ","1st UC=";Iuc(X,Y),"LEARNING=";Ba(X,Y);"%
2430 FOR Z=1 TO 3
2440 PRINT "VENDOR";Z;"OF 3"
2450 PRINT "% OF BUY BY VENDOR";Vt(X,Y,Z);"%","PRIOR QTY BY VENDOR";Vpqt(X,Y,Z)
2460 NEXT Z
2470 NEXT Y
2480 PRINTER IS 16
2490 INPUT "ARE ROUND DATA INPUTS OK? 1=YES 0=NO",Ans
2500 IF Ans=0 THEN 290
2510 RETURN
2520 Y=1
2530 IF S=Cmps(X,Y) THEN 2570
2540 IF Y=U(X) THEN 630

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2550 Y=Y+1
2560 GOTO 2530
2570 X=F
2580 Y=G
2590 GOTO 770
2600 F=X
2610 G=Y
2620 S=Caps(X,Y)
2630 X=X+1
2640 IF X>M THEN 2730
2650 Y=1
2660 IF Caps(X,Y)=S THEN 2780
2670 Y=Y+1
2680 IF Y>U(X) THEN 2630
2690 GOTO 2660
2700 Az=Vpqt(X,Y,1)
2710 Bz=Vpqt(X,Y,2)
2720 Cz=Vpqt(X,Y,3)
2730 X=F
2740 Y=G
2750 Vpqt(X,Y,1)=Az
2760 Vpqt(X,Y,2)=Bz
2770 Vpqt(X,Y,3)=Cz
2780 GOTO 700
2790 PRINT "ESCALATED TO CONSTANT FY ";Yrc;" DOLLARS BY FACTOR OF ";Esc(1)
2800 PRINT
2810 E=Esc(1)
2811 GOSUB 2820
2812 IF Esc(2)=0 THEN 2130
2813 E=Esc(2)
2814 PRINT
2815 PRINT "ESCALATED TO THEN YR DOLLARS BY FACTOR OF ";E
2816 PRINT
2817 GOSUB 2820
2818 PRINT
2819 GOTO 2130
2820 PRINT "COMPONENT"," QTY."," UNIT COST","COST"
2830 PRINT
2840 Hu=0
2850 FOR Y=1 TO U(X)
2860 Ucp=Uccap(X,Y)*E
2870 Cp=Cpst(X,Y)*E
2880 PRINT USING 1900;Cap*(X,Y),L(X,Y),Ucp,Cp
2890 PRINT
2900 Hu=Hu+Cp
2910 NEXT Y
2920 PRINT TAB(57);"-----"
2930 PRINT USING 1970;"TOTAL HARDWARE COST",Hu
2940 PRINT
2950 Pa=Past(X)*E
2960 PRINT USING 1970;"P&A COST",Pa
2970 PRINT
2980 Qa=Qast(X)*E
2990 PRINT USING 1970;"QA COST",Qa
3000 Es=Est(X)*E
3010 PRINT
3020 PRINT USING 1970;"ESIP COST",Es
3030 Tot=Hu+Pa+Qa+Es
3040 PRINT TAB(57);"-----"
3050 PRINT USING 1970;"TOTAL BUY COST",Tot
3060 Avg=Tot/Byqt(X)
3070 PRINT
3080 PRINT "ROUND UNIT COST, $";Avg
3090 RETURN
3100 END

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